**Theory of Island Biogeography**

*4.1.3 State that isolation can lead to different species being produced that are unable to interbreed to yield fertile offspring*

*4.2.1 Outline the mechanism of natural selection as a possible driving force for speciation*

*4.3.3 State and explain the criteria used to design protected areas*

A Bit of Background: The Theory of Island Biogeography originally explained how species come to be distributed across oceanic islands. Now, this theory is used to describe how islands of one habitat are located within other habitats. This theory predicts the “habitat island’s” biodiversity based on how big the island is and how far from the “mainland” it is.

Basically,

* The farther away the island, the less diverse it will be. There are lower immigration rate (organisms leaving). This is the “distance effect”
* The bigger the island, the more diverse it will be. There is a larger immigration rate because it is easier to “land” on a bigger piece of land.
* Larger islands have lower extinction rates because more space allows for larger populations, which are less vulnerable.

**Hypothesis:**

Write a hypothesis concerning our scenario (four islands of different sizes off of a coast).

**Procedure:**

You have been given a bag of 4 different species of different sizes. You will remain on the coastline of mainland (this is represented by the blue tape the ground). You will notice that there are four islands off the coast. Two islands are large, one of which is near the coast and the other is far away. There are also two small islands, one near the coast and one far away from the coast. From the coast, you will try and land all of your species on each island (one island at a time). We will then count how many individuals of each species made it to each island.

**Results:**

**Number of Species that Landed on Each Island**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Island** | **Bean** | **Cotton Ball** | **Safety Pin** | **Nail** |
| **Big, Near** |  |  |  |  |
| **Big, Far** |  |  |  |  |
| **Small, Near** |  |  |  |  |
| **Small, Far** |  |  |  |  |

**Conclusion:**

1. Does the data support your hypothesis? Explain your answer
2. Outline how natural selection drives speciation in this situation
3. Apply what you have learned about The Theory of Island Biogeography, and design a protected area in mainland China. Would it be small, large, many small areas, would they be close together? Would these areas be connected etc etc?